COURSE DESCRIPTIONS

Saturday, June 21, 2003

Implementation of Nuclear Facility Safety Basis (3-day course presented June 21-23, 2003) (24 hours)
Instructors: Pat Casey and Matt Jones, Epsilon Systems Solutions, Inc.

The course provides a detailed review of the requirements of 10 CFR 830, *Nuclear Safety Management*, and emphasizes the implementation of these requirements using the principles of Integrated Safety Management (ISM). Integration of implementing documentation such as Documented Safety Analyses (DSAs), Technical Safety Requirements (TSRs), the Unreviewed Safety Question (USQ) process, Configuration Management, and Conduct of Operations are reviewed as they support the Nuclear Safety Management Rule. The course also covers the flow down of these requirements to facility procedures and lessons learned from other DOE facilities.

COURSE CANCELED
~~**Unreviewed Safety Question (3-day course presented June 21-23, 2003) (24 hours)**~~
~~**Instructors: Bill Lapsansky, Epsilon Systems Solutions, Inc., and J. T. Beard**~~

~~This course teaches the requirements and intent of Section 830.203, *Unreviewed Safety Questions*, of Part 830, *Nuclear Safety Management*, of Title 10 of the Code of Federal Regulations and DOE Guide 424.1-1, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*. It presents the purpose of and terminology specific to the USQ process, as well as the key aspects of the USQ process. Using an interactive written case study, the student develops competencies in conducting USQ applicability assessments, USQ screenings, and USQ determinations. This course incorporates the most recent application/implementation interpretations for this process from DOE-HQ.~~

HGSYSTEM (2-part course: class in the morning and computer in the afternoon) (Saturday) (8 hours)
Instructor: Roy Hardwick

HGSYSTEM is a software package with several modules for estimating liquid and vapor release rates from vessels, vapor release rates from pools, and the subsequent dispersion of the vapor plume downwind. HGSYSTEM offers a broad spectrum of accidental release modeling capabilities, particularly for releases of dense gases such as chlorine, propane, and hydrogen fluoride. HGSYSTEM is run in batch mode using a combination of customized batch files and input data files. This course provides a hands-on introduction to running HGSYSTEM, including the interactive utility program HGINTER, and some of the individual modules such as DATAPROP, SPILL, HFSPILL, LPOOL, HEGADAS-S (for continuous releases), and HEGADAS-T (for transient releases).

Hazard Analysis (Saturday morning) (4 hours)
Instructor: Brian King, ABS Consulting

In this course you will learn techniques for qualitatively identifying and assessing the hazards associated with facility and process operations. You will learn the important factors in selecting the most appropriate technique for a given problem. These techniques are used to identify hazards of processes in all industries and government agencies. These methods are used to help ensure compliance with the DOE regulations (e.g., 10CFR830 and its safe harbor requirements) for hazard and accident analysis, as well as the OSHA and EPA requirements.

Radiological Dispersion and Consequence Assessment (Saturday afternoon) (4 hours)
Instructor: Kevin O'Kula, Westinghouse Safety Management Solutions

DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports*, provides in Appendix A guidance in performing consequence analyses for DOE facilities. Together with Nuclear Regulatory Commission Regulatory Guide 1.145 and other resources, definitive recommendations for the calculation of radiological exposures from postulated accident events are available. This training session will discuss the appropriate regulatory basis, methods, computer models, and recommended user input to assist the preparation and execution of radiological dispersion and consequence analyses for documented safety analysis reports. The training will also discuss Software Quality Assurance criteria for dispersion and consequence models in light of the Defense Nuclear Facilities Safety Board Technical Report 25, *Quality Assurance for Safety Related Software at Department of Energy Defense Nuclear Facilities*.

Sunday, June 22, 2003

Leak Path Factor Evaluation Using MELCOR and CONTAIN ~~(Computer)~~ (Sunday) (8 hours)
Instructor: Mario Polizzi

The Leak Path Factor (LPF) analysis is critical for the source term evaluation. Melcor 1.8.5 and Contain 2.0 computer codes are excellent tools to evaluate the LPF for facilities affected by accidents. An overview of the codes capabilities will be given as well as actual examples of various analyses performed. The course will focus on modeling techniques to facilitate the LPF evaluation, the manipulation of boundary conditions, discussions on the aerosol dynamics included in the computer code, seismic and fire accidents, and good practices for modeling efficiency. Actual examples will be run on a laptop PC. The overall goal of the course is to introduce these tools to perform LPF analyses evaluation.

Chemical Dispersion & Consequence Assessment (Sunday morning) (4 hours)
Instructor: Carl Mazzola, Shaw Environmental & Infrastructure Inc.

This training course presents basic principles and subsequent applications associated with the assessment of consequences resulting from an accidental release of hazardous chemicals. The training begins with presentations to introduce the participants to the fundamental elements of Chemical Dispersion & Consequence Assessment (CD/CA). These are:

1) Source term characterization
2) Atmospheric transport and dispersion analysis
3) Toxic endpoints

The course material on source term characterization covers various pressurized and non-pressurized gaseous and liquid phase release mechanisms and addresses the complex phenomenology that influences the variable rate at which the hazardous material is released as a puff and/or plume to the environment. Basic principles of two-phase flow and choked flow discharges, as well as liquid pool heat transfer and evaporation, are among the topics to be discussed in conjunction with the mechanical engineering and thermodynamic principles that underlie the characterization of the chemical source term.

The atmospheric transport and dispersion analysis element discusses the complex interactions of the puff or plume of airborne hazardous material with the atmosphere within the flow stabilization, near-field, and far-field regions. Fundamental principles of atmospheric dispersion modeling, including plume buoyancy, dense gas effects, plume depletion and deposition, effects of temporal and spatial variations of the wind field, and application of meteorological data are among the topics that are discussed.

The toxic endpoint consequences segment focuses on the application of the 103 Emergency Response Planning Guidelines (ERPGs) and its surrogate 2,234 Temporary Emergency Exposure Limits (TEELs), as indicators to establish inhalation exposure impacts of individuals from environmental release of specific hazardous chemicals.

Lastly, a reviewer's checklist will be provided as a recap to the training. It will highlight key areas that should be reviewed to evaluate the approach and accuracy of the three elements (i.e., chemical source term, atmospheric transport and dispersion, toxic endpoint human health effects) in applications that support safety analyses.

COURSE CANCELED
~~**DOE Safety Basis Review (Sunday morning) (4 hours)**~~
~~**Instructor: TBD**~~

~~The course will focus on the guidance in DOE-STD-1104-96, *Review and Approval of Nuclear Facility Safety Basis Documents (Documented Safety Analyses and Technical Safety Requirements)*. It will focus on safety basis review and approval concepts and terminology; safety management functions, responsibilities, and authorities; the management and coordination of the review and approval process; the evaluation of safety basis documents vs. the approval bases; and the development of safety evaluation reports. Particular emphasis will be focused on the review and evaluation of administrative controls.~~

Controls Selection Process (Sunday afternoon) (4 hours)
Instructor: Jim McCormick, Westinghouse Safety Management Solutions

The course is intended to disseminate information for writing and reviewing Technical Safety Requirements (TSR) in accordance with DOE Guide 423.1-1, *Implementation Guide for Use in Developing Technical Safety Requirements*; the 10 CFR 830 Rule; DOE-STD-3009-94; and other pertinent DOE requirements. The course will invite open-floor discussions and is designed to address general DOE TSR requirements as well as facility-specific situations. It is important that the majority of the participants, both reviewers and writers, have an understanding of their site-specific TSR expectations, so that these situations can be addressed during this course.

Monday, June 23, 2003

RSAC-6 Computer Code - Beginner (Monday morning) (4 hours)
Instructor: Brad Schrader, INEEL

The Radiological Safety Analysis Computer Program (RSAC) calculates the consequences of a release of radionuclides to the atmosphere. Using a personal computer, a user can generate a fission product inventory from either a reactor operating history or a nuclear criticality accident. RSAC models the affects of high-efficiency particulate air filters or other cleanup systems and calculates decay and ingrowth during transport through processes, facilities, and the environment. Doses are calculated for resuspension, inhalation, immersion, ground surface, and ingestion pathways.

Version 6 of the RSAC computer code has changed significantly from previous versions. The code has been enhanced and recompiled under Fortran 90 with full Windows interface. RSAC runs and has been validated under all versions of Windows and LINUX in accordance with Defense Nuclear Facilities Safety Board Technical Report 25, *Quality Assurance for Safety Related Software at Department of Energy Defense Nuclear Facilities*.

RSAC for Windows will be used during the training class and provided at no cost to all attendees of the training. Additional information is available at www.inel.gov/rsac.